

WHAT IS CLAIMED IS:

1. A method of packaging integrated circuits, comprising:  
disposing an integrated circuit chip outwardly from a first surface of a  
substrate;  
5 positioning the integrated circuit chip and the substrate between a first  
mold press die and a second mold press die;  
engaging the first mold press die with the second mold press die such  
that the integrated circuit chip is disposed within a cavity formed by the  
engagement of the first mold press die with the second mold press die, the  
10 cavity comprising a pre-warped configuration;  
encapsulating the integrated circuit chip with a mold compound such  
that the mold compound takes on the pre-warped configuration of the cavity;  
removing the encapsulated integrated circuit chip from the cavity; and  
curing the mold compound, whereby the curing transforms the mold  
15 compound from the pre-warped configuration to a predefined configuration.
2. The method of Claim 1, further comprising coupling a plurality of  
solder balls to a second surface of the substrate opposite the first surface.
- 20 3. The method of Claim 1, further comprising disposing a leadframe  
around a periphery of the integrated circuit chip before the encapsulating step.
4. The method of Claim 1, wherein the pre-warped configuration of the  
cavity is defined by a first non-planar surface on the first mold press die and a second  
25 non-planar surface on the second mold press die.
5. The method of Claim 1, wherein the pre-warped configuration of the  
cavity is defined by a concave surface on the first mold press die and a convex surface  
on the second mold press die.

6. The method of Claim 1, wherein the predefined configuration substantially resembles a rectangular parallelepiped.

5 7. The method of Claim 1, wherein the integrated circuit packages comprise ball grid arrays.

8. The method of Claim 1, wherein the integrated circuit packages comprise quad flat packages.

9. A system for packaging integrated circuits, comprising:  
an integrated circuit chip disposed outwardly from a first surface of a  
substrate;  
a first mold press die comprising a first non-planar surface;  
5 a second mold press die comprising a second non-planar surface;  
the first and second non-planar surfaces forming upper and lower  
surfaces of a cavity when the first and second mold press die are engaged;  
the cavity having a pre-warped configuration; and  
a mold compound adapted to fill the cavity and encapsulate the  
10 integrated circuit chip, the mold compound adapted to transform from the pre-  
warped configuration to a predefined configuration after curing of the mold  
compound.

10. The system of Claim 9, further comprising a plurality of solder balls  
15 coupled to a second surface of the substrate opposite the first surface.

11. The system of Claim 9, further comprising a leadframe disposed  
around a periphery of the integrated circuit chip.

12. The system of Claim 9, wherein the first non-planar surface comprises  
20 a concave surface and the second non-planar surface comprises a convex surface.

13. The system of Claim 9, wherein the predefined configuration  
substantially resembles a rectangular parallelepiped.  
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14. The system of Claim 9, wherein the integrated circuit packages  
comprise ball grid arrays.

15. The system of Claim 9, wherein the integrated circuit packages  
30 comprise quad flat packages.

16. A method of packaging integrated circuits, comprising:  
providing a substrate;  
providing an integrated circuit chip adapted to couple to the substrate;  
providing a first mold press die comprising a first non-planar surface;  
5 providing a second mold press die comprising a second non-planar  
surface, the first and second non-planar surfaces forming upper and lower  
surfaces of a cavity when the first and second mold press die are engaged;  
providing a mold compound adapted to fill the cavity and encapsulate  
the integrated circuit chip;  
10 determining a pre-warped configuration for the cavity based on an  
anticipated warpage of the mold compound when removed from the cavity and  
further based on a predefined configuration of the mold compound after  
curing; and  
causing the cavity to resemble the pre-warped configuration by  
15 shaping the first and second non-planar surfaces, whereby the mold compound  
is adapted to transform from the pre-warped configuration to a predefined  
configuration during the curing of the mold compound.
17. The method of Claim 16, wherein the first non-planar surface  
20 comprises a concave surface and the second non-planar surface comprises a convex  
surface.
18. The method of Claim 16, wherein the predefined configuration  
substantially resembles a rectangular parallelepiped.  
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19. The method of Claim 16, wherein the integrated circuit packages  
comprise ball grid arrays.
20. The method of Claim 16, wherein the integrated circuit packages  
30 comprise quad flat packages.